CLAIM AMENDMENTS

Please replace all prior versions of the claims with the following listing of revised claims.

1-23. (Cancelled).

24. (Currently Amended) A furnace for densifying a number of porous structures stacked adjacent each other in a stack, said stack being supported by a base plate with a top surface of said base plate being disposed below a lowest porous structure in said stack, wherein the stack comprises a center opening region and an outer region, the furnace comprising an inlet duct, an outlet duct, an inlet opening adjacent one end of said center opening region and in communication with said inlet duct and said center opening region, and a passageway adjacent said one end and in communication with said inlet duct and said outer region, said inlet duct and said passageway being disposed below ~~a lowest porous structure in said stack~~ said top surface of said base plate, a size of said inlet opening controlling gas flow to said center opening region wherein a predetermined first portion of said gas passes through said inlet opening to said center opening region and a remaining second portion passes through said passageway to said outer region.

25. (Previously Presented) The furnace according to Claim 24, further comprising a hole receiving said gas from said inlet duct, wherein said passageway extends from said hole to said outer region.

26. (Original) The furnace according to Claim 25, further comprising a distributor, wherein said hole and said passageway extend through said distributor, said passageway being a radial hole and said hole being in communication with said inlet opening, wherein said distributor is disposed between a floor plate of the furnace and a base plate supporting the stack, and wherein said radial hole passes said second portion to a space between said floor plate and said base plate.

27. (Original) The furnace according to Claim 25, further comprising a base plate supporting the stack, wherein said inlet opening extends through said base plate, said inlet opening comprising said hole and a smaller, upper hole wherein said hole is a larger, lower hole, wherein said passageway extends through said base plate to an outer edge of said base plate.

28. (Cancelled).

29. (Original) The furnace according to Claim 24, wherein said first portion is between about 60% to 80% of said gas and said second portion is between about 40% to 20% of said gas.

30. (Original) The furnace according to Claim 24, wherein said first portion is between about 15% to 35% of said gas and said second portion is between about 85% to 65% of said gas.

31. (Original) The furnace according to Claim 24, further comprising spacers disposed between adjacent porous structures in the stack thereby forming open passages therebetween, wherein some of one of said first and second portions of said gas passes between said center opening region and said outer region through said open passages.

32. (Previously Presented) The furnace according to Claim 24, further comprising a top support plate disposed away from one of the porous structures at an end of the stack opposite said one end thereby blocking a portion of said first portion of gas from passing out of said center opening region at said end and thereby forming an open passage therebetween wherein some of said gas passes between said center opening region and said outer region through said open passage.

33. (Previously Presented) The furnace according to Claim 24, further comprising a top support plate disposed at an end of the stack of porous structures opposite said one end thereby blocking most of said first portion of gas from passing

out of said center opening region at said end, said top support plate comprising at least one hole adjacent said center opening region and extending therethrough, wherein at least some of said gas passes out of said center opening region at said end through said hole.

34. (Original) The furnace according to Claim 24, further comprising a cap disposed at one end of the stack of porous structures and extending partially into said center opening region thereby blocking most of said first portion of gas from passing out of said center opening region at said end, said cap comprising at least one longitudinal hole, wherein at least some of said gas passes out of said center opening region at said end through said longitudinal hole.

35. (Original) The furnace according to Claim 34, further comprising a thermocouple wire installed through said longitudinal hole and extending through said center opening region, said thermocouple wire being connected to a thermocouple embedded in a sample porous structure.

36. (Previously Presented) The furnace according to Claim 24, further comprising a top support plate disposed at an end of the stack opposite said one end, wherein said top support plate comprises an exit hole adjacent said center opening region, said top support plate blocking said outer region whereby substantially all of said second portion of gas passes through one or more of said exit holes.

37. (Previously Presented) The furnace according to Claim 24, further comprising a top support plate disposed at an end of the stack opposite said one end, wherein said top support plate comprises an exit hole adjacent said center opening region and a smaller hole away from said exit hole, said top support plate blocking said outer region whereby most of said second portion of gas passes through one or more of said exit holes and at least some of said second portion passes through one or more of said smaller holes.

38. (Previously Presented) The furnace according to Claim 24, further comprising a hole receiving said gas from said inlet duct, wherein said passageway extends from said hole to said outer region; and a distributor, wherein said hole and said passageway extend through said distributor, said hole being in communication with said inlet opening, wherein said distributor is disposed between a floor plate of the furnace and a base plate supporting the stack, and wherein said passageway passes said second portion to a space between said floor plate and said base plate; wherein said first portion is between about 60% to 80% of said gas and said second portion is between about 40% to 20% of said gas; and further comprising spacers disposed between adjacent porous structures in the stack thereby forming open passages therebetween, wherein some of said gas passes from said center opening region to said outer region through said open passages.

39. (Previously Presented) The furnace according to Claim 38, further comprising a top support plate disposed away from one of the porous structures at an end of the stack opposite said one end thereby blocking a portion of said first portion of gas from passing out of said center opening region at said end and thereby forming an open passage therebetween wherein some of said first portion of gas passes from said center opening region to said outer region through said open passage.

40. (Original) The furnace according to Claim 39, further comprising a cap disposed at one end of the stack of porous structures and extending partially into said center opening region thereby blocking most of said first portion of gas from passing out of said center opening region at said end, said cap comprising at least one longitudinal hole, wherein at least some of said gas passes out of said center opening region at said end through said longitudinal hole; and a thermocouple wire installed through said longitudinal hole and extending through said center opening region, said thermocouple wire being connected to a thermocouple embedded in a sample porous structure.

41. (Previously Presented) The furnace according to Claim 24, further comprising a hole receiving said gas from said inlet duct, wherein said passageway extends from said hole to said outer region; and a base plate supporting the stack, wherein said inlet opening extends through said base plate, said inlet opening comprising said hole and a smaller, upper hole wherein said hole is a larger, lower hole, wherein said passageway extends through said base plate to an outer edge of said base plate; wherein said first portion is between about 60% to 80% of said gas and said second portion is between about 40% to 20% of said gas; and further comprising spacers disposed between adjacent porous structures in the stack thereby forming open passages therebetween, wherein some of said first portion of gas passes from said center opening region to said outer region through said open passages.

42. (Previously Presented) The furnace according to Claim 41, further comprising a top support plate disposed away from one of the porous structures at an end of the stack opposite said one end thereby blocking most of said first portion of gas from passing out of said center opening region at said end and thereby forming an open passage therebetween wherein some of said gas passes from said center opening region to said outer region through said open passage; said top support plate comprising at least one hole adjacent said center opening region and extending therethrough, wherein at least some of said gas passes out of said center opening region at said end through said hole.

43-56. (Cancelled).